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**FRICTION STIR RIVET DRIVE SYSTEM AND STIR RIVETING
METHODS**

ABSTRACT OF THE DISCLOSURE

Friction stir fastener equipment and method in which a series of friction stir rivets are rotatably mounted in a supply station and a computer controlled arm terminating in a rotating working head having special gripping jaws that precisely locates and grips a selected rivet. The arm then moves the rotating rivet and progressively drives it into the work until a frictionally heated and plasticized zone of material around the shank of the rivet begins to solidify. The jaws then release the rivet from the drive so that the rivet rotation decelerates to zero. Sufficient hardening of the zone effects the completion of one stir riveting cycle which may be automatically repeated.